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NEWSLETTER

Montana Science Teachers Association

Vol. 7, No. 1 "Dedicated to quality science education" February 1988

## Earth Science Teacher Wins Presidential Award, D.C. Trip

Gil Alexander of Helena High School was selected by a national committee as the 1987 Presidential Honoree for science teaching. Gil and his wife Marilyn, a chemistry teacher at Capital High, thoroughly enjoyed their Thanksgiving week in Washington. They joined the 54 teachers of science and 54 teachers of math (including Sue Dolezal of Missoula) representing each state of the union and Puerto Rico, Guam, Virgin Islands, and overseas schools. Gil was the only high school earth science teacher in this select group; four junior high science teachers were included.

Receptions, welcoming addresses that were "wonderful speeches on why we were so wonderful," lesson plan swaps, special tours, "fancy dinners that took you up to die," and demonstrations highlighted the visit to the nation's capital. Gil especially recalls:

The tour of the David Taylor Research Center where the Navy builds 2'x8' models of ships and tests same in the world's largest test tank. Every model made is stored at the center and is available on loan for teacher conferences or other educational assemblies.

Dr. Shakishiri's chemical demonstration and speech on fractals and their applications.

President Reagan's address in the Old Executive Building where he was surrounded by press corps and security guards and the signaling of his entry and exit with appearance and disappearance of the Presidential Seal.

Horse-drawn carriage ride from the Capitol to the hotel, a leisurely way to see D.C. and unwind from the fast-paced schedule.

Pleasure of having his wife, Marilyn, accompanying him to all the workshops and other special features.

The greatest satisfaction for the Alexanders was meeting so many teachers who are energetically ambitious about their programs. The spirit of collegiality was "uplifting and exciting," he reports. He was especially interested in hearing that others working on a nationwide computer "bulletin board" for science education are meeting similar bugs.

A charter member of MSTA and its current treasurer, Gil encourages other secondary science teachers to apply for the Presidential Award program in 1988. Information and application forms are available from Bob Briggs, OPI, State Capitol, Helena, MT 59620. MSTA members and other friends of elementary teachers of science may also write congressmen and senators requesting a comparable program to recognize exemplary science teaching by elementary teachers.

## Research Opportunity for Montana Secondary Teachers

The University of Montana, in cooperation with the Office of Public Instruction, will soon begin a search for the Outstanding Montana High School Science Teacher. The person selected will receive a ten-week summer research appointment for the summer of 1988 at the Solar Energy Institute in Boulder, Colorado. In addition to the opportunity of working with first-rate scientists, the appointment includes a $5,000 stipend and a $1,000 relocation allowance. Research may be done in a broad range of disciplines including biology, chemistry, physics, computer sciences and engineering. In short this is a great opportunity for Montana's high school science teachers. We'll get more information to you as soon as possible. If you have any questions, contact D. Pepi, Department of Education, 136 Liberal Arts Hall, University of Montana, Missoula, MT 59812 or Bob Briggs, Office of Public Instruction, State Capitol, Helena, MT 59620.

## University of Montana Offers Summer Science Institute

The College of Arts and Sciences will initiate a three-year Summer Institute for 20 of Montana's science teachers. Each selected participant will receive a waiver of tuition and a modest stipend. Three different courses, two in organismic field biology and one in physical science, will be offered for six graduate credits each summer. The field biology courses most likely offered will be Plants of Montana, Aquatic Biology, Birds of Western Montana, Mammals of Western Montana, Animal Ecology and Animal Behavior. Geology of Western Montana, Recombinant DNA and Modern Physics or Environmental Chemistry will most likely be the offerings in the physical sciences. The Institute will be scheduled for three days a week for three weeks, beginning on June 20, 1988. A preliminary questionnaire concerning the Institute has been mailed to most of Montana's science teachers. If you did not receive the first mailing and wish to receive further information about the Institute, write to: J. Flightner, Dean, College of Arts and Sciences, University of Montana, Missoula, MT 59812.

## Nominations Now Being Sought for Presidential Awards for Excellence in Science and Mathematics Teaching

The 1988 Presidential Awards for Excellence in Science and Mathematics Teaching program is now officially under way, and nominations for teacher candidates are being accepted in each state. Science or mathematics teachers can be nominated by colleagues, administrators, students or parents. Nominations must include the teacher's name, school and school address; they must be signed, include a description of the nominator's connection with the teacher, and must be sent to Bob Briggs, Science Specialist, or Dan Dolan, Mathematics Specialist, Office of Public Instruction, State Capitol, Helena, MT 59620. **Nominations must be postmarked by March 7, 1988.**

State selection committees will choose six teachers, three in science and three in mathematics, for state-level awards. These six teachers will receive citations of merit and will be recognized and acknowledged within the state. They will also be the official state candidates for Presidential Awards.

Two Presidential Awards for Excellence in science and mathematics teaching will be given in each state: one to a mathematics teacher and one to a science teacher. The two Presidential Awards winners for Montana last year were Gil Alexander, science teacher, Helena High School, and Sue Dolezal, mathematics teacher, Sentinel High School, Missoula.

Teachers of mathematics and science in grades 7 through 12 in any public or private school in Montana, who have at least five years of teaching experience, are eligible for nomination. National winners will be selected in July, and the honored teachers will be invited to an expense-paid awards ceremony at the White House and other activities in the Washington, DC area October 24-28, 1988.

Among other awards will be a $5,000 grant from the National Science Foundation to each winner's school which can be used under the teacher's direction for the improvement of instructional programs in mathematics and science in the particular school district. Last year, each national award winner received a computer, several software programs and many other individual gifts.

The Presidential Awards for Excellence in Science and Mathematics Teaching program was established by the National Science Foundation "to identify outstanding secondary school teachers of science and mathematics who can serve as models for their colleagues and to provide increased status and rewards for demonstrative professionalism so that high quality teachers will be encouraged to enter and remain in this most important field." The experiences of the teachers selected for this award program in the past suggest that these purposes are being met.

The awards program is administered by the National Science Foundation in conjunction with the National Council of Teachers of Mathematics (NCTM) representing the mathematics community and the National Science Teachers Association (NSTA) representing science teachers.

The mathematics and science specialists in the Montana Office of Public Instruction will be working with the Outstanding Teacher of the Year committees in the MCTM and MSTA to select the state finalists for Montana.

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## Attention High School Science Teachers!

The Electrical Engineering Department at Montana State University is holding a two-week Electrical Engineering and Computer Camp this summer. Two sessions will be offered, the first from June 20-July 1, and the second from July 11-22. The camp consists of hands-on laboratory experience for high school students interested in electrical engineering and computer basics, and will stress practical application and use of units, integrals and derivatives, Kirchoff's Laws, voltmeters, ammeters, ohmmeters, oscilloscopes, resistors, capacitors, conductors, diodes, transistors, logic gates and flip-flops. Extracurricular activities are planned for the weekend, and university facilities, both cultural and athletic, will be available to those attending the camp during their non-classroom hours. For further information on the camp, contact Dr. John Hanton, Electrical Engineering Department, Montana State University, Bozeman, MT 59717-0007 or call 994-5983.

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## A Weekend Workshop on Astronomy for Teachers

A weekend workshop on teaching astronomy in grades 3-12 will be offered June 25-26, 1988, as part of Universe '88—the joint meeting of the Astronomical Society of the Pacific and the Royal Astronomical Society of Canada at the University of Victoria in British Columbia.

The program will include hands-on sessions about specific classroom activities and resources, non-technical lectures on new developments in astronomy, guidance for selecting and using basic telescopes and computer software, and an evening observing session at the Dominion Astrophysical Observatory. The workshop is designed for people **without** extensive background in astronomy and includes dozens of useful handouts. Inexpensive dormitory space has been arranged at the university.

The workshop is open to all teachers, librarians, curriculum specialists and others working with young people. To get more information and a registration packet, write to: Summer Workshop, A.S.P., 1290 24th Ave., San Francisco, CA 94122.

## Resources for Teachers

**FREE.** Sky Publishing offers pamphlets for librarians and teachers of astronomy. On school stationery, briefly describe the course(s) you teach and the number of students in them. Send your request for **1987 Guide to the Heavens, Welcome to Our Universe, Observing with Binoculars,** and **How to Choose a Telescope** to: William Lawrence, Sky Publishing Corporation, 49 Bay State Road, P.O. Box 9102, Cambridge, MA 02238-9102.

**FREE. Photovoltaics in the Pacific Islands: An Introduction to Photovoltaic Systems** is an energy primer appropriate for school children of all ages. Brief explanations with accompanying pictures demonstrate actual use of photovoltaics to power schools, run a clock, or run small appliances. For a copy write to: National Appropriate Technology Assistance Service (NATAS), P.O. Box 2525, Butte, MT 59702.

**Acid Rain: Science Projects** is a 22-page booklet of experiments for students in grades 5-12. Available for $9.95 plus $2 postage and handling from The Acid Rain Foundation, 1630 Blackhawk Hills, St. Paul, MN 55122.

A collection of **53 projects in food, agriculture, and natural resources** is intended to aid secondary science teachers in placing greater emphasis on open-ended labs and problem solving activities. Write: Ohio Agricultural Education Curriculum Materials Service, Room 254, Ohio State Univ., 2120 Fyffe Rd., Columbus, OH 43210-1099. Cost: $1.73.

**"Human Biology Projects"** is available from Animal Welfare Institute, PO Box 3650, Washington, DC 20007.

Only $3.00 brings a 104-page book, "Thousands of Science Projects" which lists topics used by Westinghouse Talent Search International Science and Engineering Fair students. This is a good source for ideas. Write: Thousands, Science Service, 1710 N. St. NW., Washington, DC 20036.

**Aquatic Life and Stream Quality Sampling Kit** can be purchased from Save Our Streams, 263 Scotts Manor Dr., Glen Burnie, MD 21061. Cost: $8.00.

Free booklet regarding research on galaxy motions. No previous knowledge of astronomy is necessary. Write: Perspectives in Science, Carnegie Institution of Washington, 1503 P. Street NW, Washington, DC 20005-1910.

## Science Screen Report Videotapes

Science Screen Report is the name of an exciting, stimulating educational series of junior and senior high school science films. They are designed to increase and expand your students' understanding of current affairs in science, while reinforcing curriculum material from biology to ecology to medicine and space science in a way that is more engaging than any newspaper story or magazine article could be.

Science Screen Report is produced by Allegro Film Productions, in cooperation with the National Science Teachers Association and the Accreditation Board for Engineering and Technology. Pfiser Inc. is sponsoring the viewing of these films for schools anywhere in Montana, with Western Montana College acting as the distribution center.

Teachers wishing to show any of these films to their classes should write to: Dr. John M. Rogan, Science Division, Western Montana College, Dillon, MT 59725.

A videotape containing the film requested will be sent to the school, and may be kept for up to one week. The service is free, the only cost to the school being the return mailing.

Currently, the following films are available:

**Genetic Engineering**—12 min.
**Biomedicine Rebuilds the Human Anatomy**—13 min.
**Studying the Beetle**—23 min.
**Colors, Chemistry and Computers**—13 min.
**Acid Rain—In Search of Solutions**—14 min.
**High Tech Aircraft Revolutionize Flight**—13 min.
**The Universe Probed by Radio Astronomy**—14 min.
**Minority Inventors**—13 min.
**Frogs—Amazing, Adaptable Creatures**—23 min.
**A Journey Through our Solar System**—14 min.
**Project Monex Studies the Monsoon**—13 min.
**Electromagnetism at Work**—13 min.
**New Scientific Breakthroughs from Computer Graphics Technology**—12 min.
**To Capture the Sun**—13 min.

## ACTIVITIES FOR YOUR CLASSROOM

### Whale of a Whale

from TOST Science Teacher
December, 1984

On most any January day you can stand on a rocky headland along the Oregon coast and see several clouds of spray from California gray whales as they surface to "blow." These whales are on their annual migration from the Bering and Chukchi seas to calving lagoons of Mexico.

But it is difficult to know how whales look by watching them in the ocean. A cloud of spray, a portion of the back and an occasional tail is often all you can see. To really get an idea of how they look, you can build a paper model of a whale. Here's how:

Get a book or chart on whales and select a whale you would like to "build." Note that there are two groups of whales, **toothed and baleen.** With some large pieces of paper, lots of newspaper, paint, masking tape, and a stapler, you can turn a rainy Montana day into a study of whales!

1. Start with four pieces of paper, two 3x6 feet and two 3x3 feet. Make a full drawing of the whale's head and body on one of the long sheets and flukes (tail) and flippers on one short sheet (see figure a). Since the tail attaches horizontally and not vertically like a fish, the sheets must be drawn separately. Maintain a two-inch margin around the drawing for stapling.

2. Cut out both body sheets and both tail sheets together. Remember the two-inch margin.

3. Paint the OUTSIDE of the whale. Add barnacles, scars, etc., if you wish.

4. Open mouths are harder to construct, but they make dramatic sculptures.

a. After studying the shape of the whale's mouth from a picture, measure the length of the mouth on your drawing and draw the upper and lower jaw on one sheet of paper to fit (see figure b). Paint it and cut it out. Better to make the jaws too large than too small, because they can be trimmed to fit. The upper and lower jaw will be stapled into the head later.

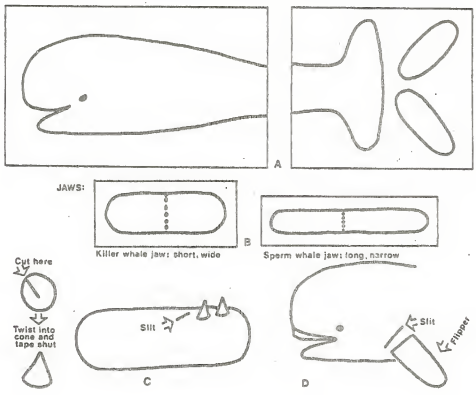
b. If your whale is a **baleen** whale, use yarn, paper, an old mop, etc., for the baleen. If your whale is a-**toothed** whale, conicle teeth may be made from paper, stuck through the lower jaw and taped on as shown in figure c (sperm whales have teeth in their lower jaw and only killers have teeth in both jaws).

5. Now you are ready to stuff your whale with crumpled newspaper. Start by stapling and stuffing the flipper (DON'T OVERSTUFF!). Cut a slit (see figure d) in the whale body where your flippers go and tape them on the inside. Your whale is now becoming fragile, so be careful when you handle it.

6. Staple the bottom of the whale body and stuff with newspaper. When the lower jaw is filled, staple the jaws into the head. Continue to stuff and staple, but don't overstuff or it will burst. When most of your whale is stuffed, attach the tail (before stuffing it). Remember, the tail attaches horizontally. Staple and tape the lower part of the tail onto the body, then repeat for the upper part (this takes lots of patience). Carefully continue stuffing the tail and stapling. The tip of the tail will be the last to close.

7. Suspend your whale from the ceiling. For lighter whales, reinforce areas in the body with masking tape, punch holes and suspend with heavy string; for heavier whales, make a sling with colored yarn.

—Bill Hastie
TOST Science Teacher
December 1984



## Curriculum Development on the Greenhouse Effect

Educators on all levels are invited to join a cooperative curriculum development project on **Global Climate Change**—its science and its environmental and social consequences.

The Climate Protection Institute is serving as a clearinghouse for suggestions on how to bring the topic of global warming into classrooms in elementary, middle and high schools. The best of the suggestions will be distributed to interested teachers for evaluation in their classrooms.

For further information write to: Educators' Network Project, Climate Protection Institute, 159 Thomas Paine Ave., New Rochelle, NY 10804.

## Pop Cans for Science Studies

**from Missouri Science News**
**October 1986**
**John H. Settlage**
**NMSU**
**Kirksville**

POP CANS—empty or full may be used to teach science as well as other subjects. Have you tried the following?

1. Float FULL unopened cans of soda in water. Compare diet type with regular. The diet type floats, regular sinks: Density differences between sugar and non-sugar laden water. NOTE: By careful pouring, the soda types should "layer." Compare the density differences between a clear diet drink and a dark non-diet cola.

2. Compare the ingredients, the label lists are in order of relative quantity. Water, sugar—note the different names for sugar such as corn syrup, dextrose, etc. Is pop a "good buy?"

3. Dry out and recover sugar from a sample. Nearly 10 teaspoons of sugar are present in many 12 ounce soft drinks. Compare to sweetened tea or homemade lemonade.

4. Compare caloric values. A regular soda has less than 200 calories. Compare to a "BIG MAC" or 100 calories per mile of jogging.

5. Place about 200 ml of water in an empty soda can. Bring to a boil; place top down in cold water container. Gloves are excellent pot holders. If PLUNGED into the cold water, the can dramatically collapses from the pressure reduction resulting from steam condensation. If placed more slowly into the cold water, the pop can will nearly fill with water because of the pressure reduction.

6. Have a student stand carefully balanced on an upright empty pop can. Tap can sides from opposite directions with your fingers, quickly. The can collapses as the student drops to floor level. Illustrates the relative rigidity of cylinders.

7. Recycle the aluminium cans. Take a litter survey. Notice changes in label colors, photochemistry? Relate to ecology, energy savings—much more energy is needed to produce aluminum from ore than to recycle the metal. Sell for school project finances or for local charities or work projects such as the Sheltered Workshop.

8. Brainstorm alternate uses of empty pop cans.

## Levitation Kits Demonstrate Superconductivity

Superconductors are moving into high school classrooms in the form of a "Project 1-2-3" levitation kit. The kit was developed by Arthur B. Ellis, a University of Wisconsin, Madison, chemistry professor, under the auspices of the Institute for Chemical Education, which is selling the kits at cost.

"The new superconducting materials have created a tremendous excitement in the scientific community," explains Ellis. "I think it's important that we convey some of that excitement, the magical quality of superconductivity, to young people." This kit produces the "gee whiz" of "today" science and has the potential of being a powerful teaching tool.

The kit contains everything you need to demonstrate levitation except a supply of liquid nitrogen in an appropriate container, plastic tweezers, plastic foam cups, insulated rubber-coated gloves, and safety goggles. In addition to details on how to perform the experiments, the kit includes all the necessary safety warnings.

The kits sell for $25 each, including the shipping and handling. A check or money order can be sent to the Institute for Chemical Education, Department of Chemistry, University of Wisconsin, Madison, WI 53706.

## First Recycling Law

**from Energy and Education**
**an NSTA publication**
**October 1987**

The State of New Jersey has made news by becoming the first state to make recycling a law. Each of the state's 21 counties must develop and implement its own program to recycle at least three items such as paper, aluminum, glass or plastic.

The law is a result of dwindling landfill space. Senator Paul Contillo, who sponsored the bill, says that because New Jersey is the most densely populated state in the country, it is losing its landfill space rapidly. New Jersey is helping each of its counties by providing tax credits, loans and grants, which help new recycling programs starting out or old ones that need to be updated.

In a related story, Dane County, Wisconsin has passed an ordinance requiring leaves and grass to be hauled to one of four sites in the county set aside for that purpose. Dane County is concerned about its own disappearing landfills. This new law is voluntary for the first year, but towns and cities will be required to develop their own ordinances or be banished from the county landfills.

For more information about the New Jersey recycling law, contact Gretta Kiernan, c/o Paul Contillo, 90 Main Street, Hackensack, NJ 07601. For more information about the Dane County compositing ordinance, contact Dennis Sopcich, Dept. of Public Works, Rm. 519, 210 Martin Luther King, Jr. Blvd., Madison, WI 53709.

This story was abstracted from **Wisconsin Energy News**, published by DOA/Division of State Energy & Coastal Management.

## Teenager's Medical Terminology

Artery—The study of paintings
Barium—What you do when CPR fails
Cataract—White water on river
Caesarean Section—A district in Rome
Colic—A sheep dog
Coma—A punctuation mark
Congenital—Friendly
Dilate—To live long
Fester—Quicker
G.I. Series—Baseball games between teams of soldiers
Grippe—A suit case
Hangnail—A coat hook
Medical Staff—A doctor's cane
Morbid—A higher offer
Nitrate—Lower than the day rate
Node—Was aware of
Organic—Musical
Outpatient—A person who has fainted
Post-operative—A letter carrier
Pneumonia—Freshly printed dollar bills
Protein—In favor of young people
Secretion—Hiding anything
Serology—Study of English Knighthood
Tablet—A small table
Tumor—An extra pair
Urine—Opposite of you're out
Varicose Veins—Veins which are very close together

**—Unknown source**

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## Messages to Us From Children's Literature

**by Emily Carpenter**
**Challenger Elementary**
**Mukilteo Schools, Washington**

In many books written for children I have found that the author has slipped in a message for adults on the chance that some might read it. One of these is in **Danny the Champion of the World** by Roald Dahl where the boy is telling about putting some raisins to soak. He points out that it would be much easier and quicker if his dad did it all himself. But one of the great things about his dad is that he is willing to let Danny do such tasks, and many far more complicated, so that he can learn by experience. His dad stands by ready to help if needed.

All of us have things we can do quicker and better than someone else. Sometimes quicker and better is of little importance. Consider science in the classroom. It is much easier to just "go over" the materials in the textbook or perhaps do a demonstration. At times, these are the best route, but think of how much more effective many of our lessons would be if we let the students have the real learning experiences while we stood by to help.

When we are considering how to teach something let's remember the worth of hands-on science.

In **Sea Pup** by Archie Binns, a boy is allowed to write on a subject he is really interested in instead of the "blanket" assignment made to the whole class. Many teachers would not allow this. It turned out that the boy did far more work than assigned. He did research in a variety of ways. He found out what he knew, what was known by others about the subject, and to what he had no answers. When possible students should be given choices so that their work will be more meaningful.

Children's literature often has more to offer than a good story.

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## Raime Sweater Safety Alert!

A recent incident at a school involved a student whose sweater caught on fire. Fortunately, the student was not hurt. Investigation revealed the sweater she was wearing was made in China and was composed of: 61 percent Raime, 27 percent cotton, and the remainder polyester. Contact with Dupont Fiber experts revealed that Raime is a natural China grass used in making fiber. It is easily lit by open flames. Check garment labels and use caution any time this fabric is worn.

**—NST Newsletter**

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## NEWMAST Honors Workshops

* Interact with NASA scientists and engineers
* Become involved in state-of-the-art research and development activities in space and technology
* Discover NASA educational programs
* Two-week workshops to be held during July and August 1988, at NASA research centers
* Travel, housing and per diem will be provided
* Math and science teachers grades 7-12 in U.S. schools are eligible
* Sponsored by NSTA in cooperation with the National Council of Teachers of Mathematics and supported by NASA

Please send me _____ nomination packages.

Name _____

Address _____

City_____ State_____ Zip_____

**Deadline for receipt of completed nomination packages:** April 15, 1988.

MSTA Newsletter is a quarterly publication providing news and ideas for teachers of science. Share your plans, projects and ideas. Send items for the next issue to Doris Simonis, Editor, School of Education, University of Montana, Missoula, MT 59812 by March 15, 1988.

## Tune In

When Marconi invented the radio, he probably didn't have hazardous waste in mind. But researchers at the Center for Hazardous Waste Management on the campus of the Illinois Institute of Technology have found a way to use radio waves to clean up contaminated soil.

"We had been working since about 1976 on developing a radio-frequency heating process for oil shale and tars, and we had actually done field experiments in Utah on both oil shale and tars," explains Dr. Richard Snow, who directs the center. "And then about that time, in the late 1970s, the concern with hazardous-waste sites began to develop, and we got the idea of applying this process to hazardous-waste sites."

The process is similar to that of a microwave oven, according to Snow. Electrodes are placed in the contaminated soil; the soil between the electrodes is then subjected to a radio frequency, which heats it up. As the water in the ground is boiled off, it vaporizes the organic materials in the soil. The scientists capture the vapor and condense it into liquid form for further treatment.

"By choosing the right temperature in operation, we can get over 99 percent removal of materials like tetrachloroethylene, and if we go to a little higher temperature, we get the same kinds of removals for PCBs (polychlorinated biphenyls)," says Snow.

This treament is still in the experimental stages, but Dr. Snow estimates it will be ready for commercial use in about three years.

from Chemecology Dec./Jan. 1988

## Radiation Monitors Help Locate Huge Dinosaur

Back in 1981, four hikers in the Jemez Mountains of New Mexico stumbled onto what may be the remains of the world's largest dinosaur. They discovered several vertebrae that had been exposed by erosion, and contacted the New Mexico Museum of Natural History. The museum's preliminary excavation turned up eight vertebrae, a piece of thigh bone and assorted other skeletal parts. The creature was estimated to have been about 1½ times larger than a blue whale, measuring more than 100 feet long.

In April of this year, Los Alamos National Laboratory supplied a subsurface radar machine that picks up signals from the fossilized dinosaur. The machine enabled researchers to provide information on the position of the skeleton buried beneath a 144 million year old rock formation.

Neutron activation studies have already been conducted on some of the bones by Ernest Gladney of the Lab's Health and Environmental Chemistry Group. Analysis shows that there is about 400 times more uranium concentrated in the bones than in the surrounding rock. Because of this, background radiation monitoring equipment is able to pinpoint the area where the skeleton of this "Earth Shaker" lies.

Other preliminary work planned by the museum and Los Alamos may involve removing seven-inch cores from the mesa and inserting scintillation equipment (to measure radiation) in the holes to determine how and where best to dig for the dinosaur. Such technologies would prevent unnecessary damage to the bones caused by more violent methods such as explosives.

from Reactions, Vol. 3, November 1987

MONTANA
SCIENCE TEACHERS
ASSOCIATION

Gil Alexander, Treasurer
Helena High School
Helena, MT 59601

Membership Category:

1 year $8.00_____

2 years $15.00_____

3 years $22.00_____

1 yr/Student $3.00_____
Retired

Return this statement with your check payable to MSTA to the above address.

## MEMBERSHIP APPLICATION (Please Print)

Name _____
Last First Middle

Address _____

_____
County City State Zip Code

Phone ( )_____ Date _____

Name of School/Affiliation _____

MSTA Region (see map on cover)_____

Grade Level: Subject:

| | | | |
|---|---|---|---|
| ____K-6 | ____Integrated Science | | |
| ____6-9 | ____Life Sci | ____Biol | |
| ____9-12 | ____Phy Sci | ____Chem | |
| ____Col/Univ | ____Earth Sci | ____Phys | |
| ____Sup/Adv | ____Other | ____Mth | |

Membership includes one year subscription (4 issues) to *The Montana Science Teacher*

MSTA will help the individual participate in determining the destiny of science education in Montana. The organization serves as a vehicle for educators from all professions to exert positive influences on young people. Many important decisions concerning the scope and direction of science education will be strongly influenced by our organization.

The MSTA goals are to increase public awareness, interest and support of science education in Montana.

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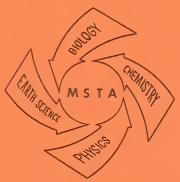
**Montana Science Teachers Association**




*Dedicated to quality science education*